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CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

Vol. XIV MARCH, 1942 No. 3

FIG. 21

A *Dudleya,* 15 inches across, photographed by Mrs. Violet Mautner of the Santa Barbara Library. Habitat: Near Manzana Creek, Figueroa Mountain, fifty miles northeast of Santa Barbara, Calif.

CACTUS AND SUCCULENT JOURNAL

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PRESIDENT'S MESSAGE

Many of our members live apart from the local groups who become affiliated with the National Society. Yet they do just as much, frequently more, toward spreading interest in Xerophytes. I refer to those individuals who are ever willing to show their collections to visitors, discuss their plants, their methods of propagation, etc.

Unfortunately, we seldom hear of these actively interested individuals at our national headquarters. And yet we need contact with such members. Frequently, we have new members, or prospective members, write in for information which can best be furnished by some near by member. If we refer them to you who are in the immediate vicinity, a two-fold purpose is accomplished. The inquirer receives a better answer than we could give because we are so remotely situated and you will find that you are not alone in your locality in your interest in Xerophytic plants.

So, I am asking you individual members to write to me. Tell me something of your collection, how long you've been interested, whether you like to have visitors, and any other pertinent facts.

* * *

Cacti and succulents have long given us food for thought. Now, it appears, they might offer us food in the true sense of the word. If present conditions continue to exist, we may have to publish recipes and notes on the edibility of the species. Take care of that garden, Brother, you may have to eat your hobby!

ERVIN STRONG.
315½ W. Erna, La Habra, Calif.

CACTACEAE—Marshall and Bock

Advertised as "Naming Cacti," this book is now published and ready for distribution under the name "Cactaceae." Owing to defense conservation of material, only 1000 copies were printed. True to the high standard of Abbey Press books, it is packed with illustrations, besides the 30 full-page, group drawings illustrating all of the genera. This book is low-priced at $5.00, and the next reprint will no doubt be $7.50. Order from Box 101, Pasadena. Postage U.S.A. 10c; foreign 50c. Please add Sales Tax in California.

STANDARDIZED PLANT NAMES

Any member who is interested in securing a copy of this recent $10.50 reference book, at the pre-publication price, please communicate with Box 101, Pasadena.

Mammillaria Nellieae Comb. Nov.

In the course of a recent study of the Cactaceae I have come to the conclusion that the following transfer may be desirable: **Mammillaria Nellieae** (Croiz.) comb. nov.—*Coryphantha Nellieae* Croiz. in Torreya 34: 15. 1934.

A discussion of the limits of *Mammillaria* and *Coryphantha,* with general consideration on the phylogeny and classification of the Cactaceae is in preparation. *Mammillaria Nellieae* seems to have been so far overlooked in all accounts of the flora of Texas.

LEON CROIZAT
Arnold Arboretum
Harvard University
Jamaica Plain, Mass.

THESE *are time when we should cling to the steadfastness of gardens. We must be conscious of faith in the goodness of things. We need personal contact with anything as durable and as incorruptible as the soil and sunshine and rain. We need crops and we need food, but we should never lose sight of the verities that maintain the upward look and carry us through. We must have growing plants, that are not afraid.*

L. H. BAILEY.

TEN YEAR INDEX

Your back issues will be more usable if you have this 10-year cumulative index of 20,000 references. Mr. E. M. Baxter devoted a year's spare time in compiling this work. Most of the known plants are listed, as well as the names of people who have made cactus history these last ten years. Bound in cloth, 60 pages $1.50 postpaid. Box 101, Pasadena, Calif.

FIG. 22. *Haworthia glauca* Bak. nat. size.

Notes on Haworthias

By J. R. BROWN

Haworthia glauca Bak. in Journ. Linn. Soc. XVIII (1880) 203; Berger in Pflanzen. IV. 38 (1908) 83; Poelln. in Desert Plant Life IX (1937) 33 photo.

Plant with leafy stems to 14 cm. tall, 2.5-5.5 cm. in diam. Leaves crowded, ascending, oblong-lanceolate, pungent, 2-4 cm. long, 8-15 mm. wide, pale green or glaucous green, older leaves becoming tinged with purple, smooth, and without markings, face somewhat flat, back rounded, keeled in the upper part and with 5-11 slightly raised vertical lines.

Peduncle, including the raceme, about 30 cm. tall, flowers with short pedicels; bracts small, ovate; perianth 18 mm. long, the segments about half as long as the tube.

Locality: Supposedly from the Orange Free State, without exact locality.

Introduced to England by Thomas Cooper about 1862.

In 1935, through the courtesy of the Director, a plant of *Haw. glauca* Bak. was received from Kew Gardens and at the same time F. R. Long of Port Elizabeth sent to me a large, mature specimen of a Haworthia under the name *Haw. glauca* and with the locality as Zuurberg. At that time, the plant received from Mr. Long was so much different from the Kew plant in size and habit that I surmised it must be a larger form. However, as the years passed by, the plant from Kew, after being grown outdoors for several years, assumed the same appearance as

the more recent plant from So. Africa.

The plant shown in the photo of *Haw. glauca* is a part of the plant received from Kew. This plant, growing outdoors, is in a vigorous growing condition and shows the very glaucous coloring of the younger growth. It also shows the great variation from the plant when received from Kew and which at that time agreed exactly with Baker's description. This is an example of the difficulty, often experienced, in trying to determine if a recent plant from So. Africa is the same as one which was described from greenhouse material many years ago.

Haworthia glauca Bak., of the sect. *Coarctatae* Berger, may vary from a plant growing in the shade with loosely arranged, spreading, 5 cm. long and almost subulate leaves to a plant under dry conditions with crowded, somewhat incurving, 3-4 cm. long leaves. When grown under favorable conditions, in the open, the upper margins and keels are somewhat crenulate with minute, whitish teeth, these may never be present under glasshouse environment and were not visible when the plant was first received from Kew.

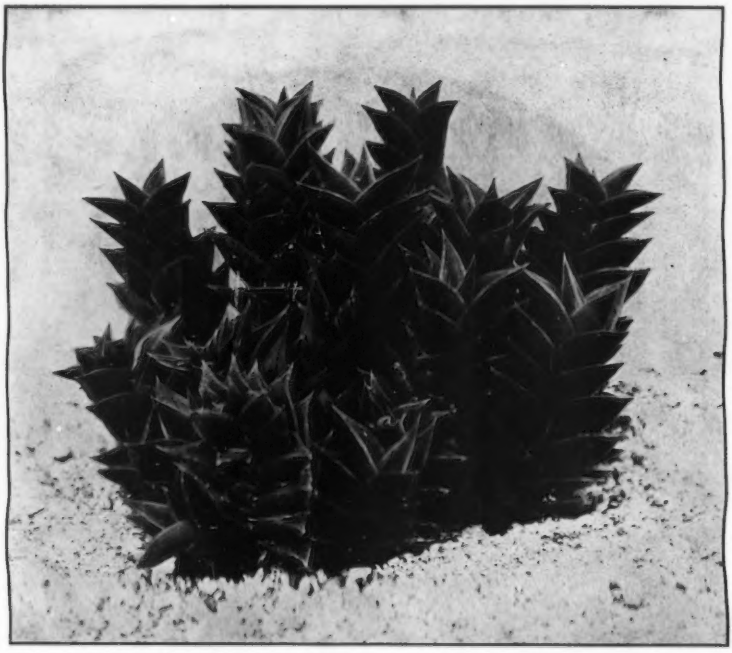

FIG. 23. *Haworthia viscosa* (L.) Haw. var. *caespitosa* Poelln. nat. size.

Haworthia viscosa (L.) Haw. var. **caespitosa** Poelln. in Repert. Sp. Nov. XLIV (1938) 240, in Desert Plant Life XI (1939) 8, photo.

Plant with leafy stems to 6 cm. tall, very proliferous and forming dense clusters, stems at first somewhat horizontal then ascending.

Leaves in 3 somewhat straight rows, 10-12 mm. long, 6-8 mm. wide, distinctly recurved at the sharp tips, more horizontal in cultivated plants.

Locality: Vensterkrans near Ladismith.

The plant of this Haworthia which is shown in the photo has been in cultivation under glass for about 6 years and the tallest stems are scarcely 8 cm. tall and the clump consists of 30 stems, showing its very caespitose nature. Another plant received at the same time, but grown outdoors has retained its smaller stature, the tallest stem scarcely attaining a height of 6 cm. In cultivation, especially under glass, the rows of leaves become more spiral and the leaves slightly longer and wider. The horizontal position of the young stems, mentioned previously, is not always apparent and this may be often due to the young stems reaching for the outside of the cluster, but young stems occur which attain a length of 2-3 cm. horizontally before ascending.

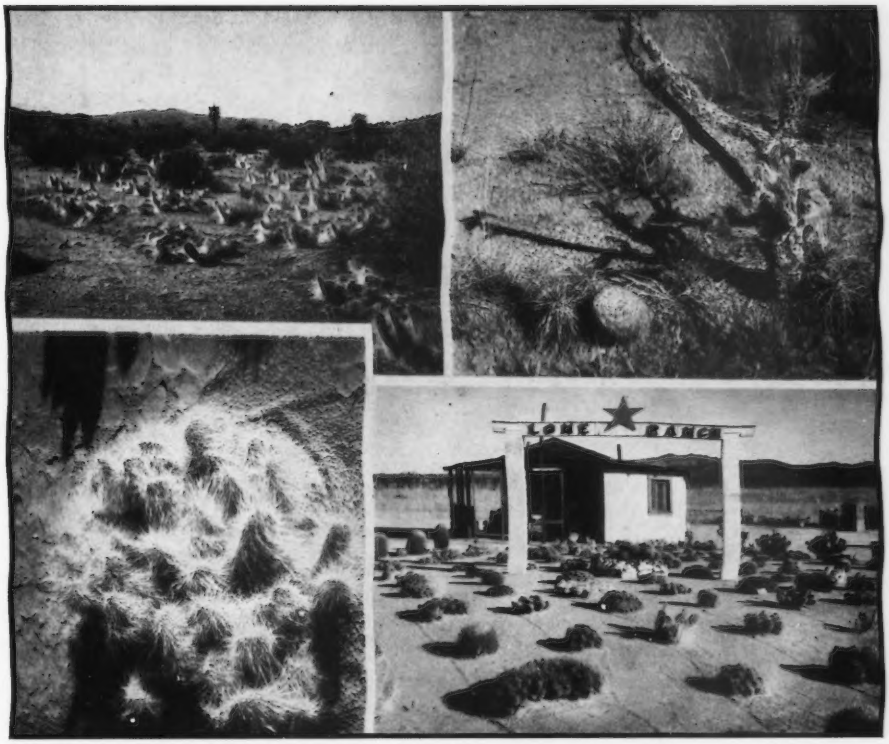

FIG. 24. (A) UPPER LEFT: *Opuntia erinacea* resemble white rabbits. (B) UPPER RIGHT: *Coryphantha Alversonii*. (C) LOWER LEFT: A four-foot clump of *O. erinacea*. (D) Roadside planting of locally collected plants. Photos by Ervin Strong.

The Home of Eight Species of Cacti

By W. TAYLOR MARSHALL

Sunshine Valley, in California, lies in the northern portion of Riverside County, between the Little San Bernardino Mountains and the Pinto Mountains, an elevation of about 4500 ft. From the valley the snow-capped peaks of San Gorgonio and San Jacinto are visible and the valley itself is visited by occasional snows. Below freezing temperatures are usual at night in winter.

The summer temperature goes to about 124° in the shade during the day, with night temperatures of 90°.

The surrounding mountains are of decomposing granite and the floor of the valley is largely a series of alluvial fans composed of decomposed granite enriched by decaying leafmold washed from the mountains.

On the north side of Sunshine Valley lies an alluvial fan rich in cactus and other desert vegetation. The particular fan we are discussing is bounded by two dry stream beds which limits the range of the several species as completely as would a very high fence.

As you approach the fan by the old mining road, which cuts off from the Key's Ranch—Twenty-Nine Palms road, only a few scattered *Opuntia acanthocarpa* and *Yucca mojavensis* compete with the sages and greasewood.

Just before reaching the dry wash, which bounds our fan, colonies of *Opuntia Parishii* sprawl over the ground and it is also found in lesser quanities on the fan. When the dry wash is reached, it is noted that *Opuntia erinacea* is growing on the far bank, but does not cross at any place. It is fairly uniformly spread over the fan, generally thinning out as the hills are reached.

The photograph A shows *Opuntia erinacea* on

this fan. They justify the name applied to them by Erwin Strong, my companero on the trip, who calls them "vegetable rabbits."

Cleistoyucca brevifolia, the Joshua tree and *Yucca Mojavensis* are scattered over the fan. The Yucca stops at the washes but the Cleistoyucca covers the whole valley.

Scattered liberally over the fan are clusters of *Echinocereus Engelmannii* which extend right up into the hills. The spine coloration varies from white through yellow and brown to one with black central spines.

Coryphantha Alversonii is very sparsely scattered over the lower part of the fan, becoming more plentiful as one nears the mountains. It grows in fair quantity in the rocks at lower elevations on the mountains. Photograph B shows *Coryphantha Alversonii* with a black and white spined *Echinocereus Engelmannii* just left of it and a second plant of *E. Engelmannii* just to the right of the base of the skeleton of an *Opuntia acanthocarpa.*

As you approach the foot of the mountains, plants of the blue-bodied, golden-spined *Opuntia chlorotica* are found, always growing from near the level stream bed but backed against protecting rocks. This choice of location is characteristic of *O. chlorotica* and would indicate that it likes moisture at its roots with extreme reflected heat from the surrounding rocks.

Growing with *O. chlorotica,* in a typical location, can be seen: *Yucca mojavensis, Opuntia erinacea, Echinocereus Engelmannii* and *Coryphantha Alversonii.*

Opuntia basilaris was observed in the rocks near the mountains and to a lesser extent on the alluvial fan making eight species of cactus in the association with the two lilies, *Yucca* and *Cleistoyucca.*

To complete the picture, a species of *Dudleya* not yet identified was very profusely scattered over the rocks at the base of the mountains and particularly colorful, red-spined *Ferocactus acanthodes* was scattered over the sides of the surrounding mountains.

Echinocereus mojavensis in large clusters is found on the rocks on the south side of Sunshine Valley, but does not occur on the north side so these are not included in this group.

The cactus in the backyard of the Lone Star Ranch (D) is a familiar sight to travellers to Twenty-Nine Palms.

CEPHALOCEREUS

(A talk given to the Massachusetts Society by DR. WINTHROP WETHERBEE, JR.)

INTRODUCTION

When we think of Cephalocereus, we think of *C. senilis,* certainly one of the three or four best known species of cactus, and in the front rank of those most desired and cultivated by amateurs.

The plant was first described in 1824, by Haworth, (1) the great English botanist, who named it *Cactus senilis.* Fourteen years later, in 1838, Lemaire (2) redescribed it, assigned it to the genus Cephalophorus, as *C. senilis;* in the same year, Pfeiffer (3) established the new genus, *Cephalocereus,* and made this plant the type species, which it has remained through many subsequent re-classifications by other authorities.

DEFINITION

The name, *Cephalocereus,* is derived from the Greek "cephalos," meaning "head," and the Greek, also Latin, "cereus," signifying a wax candle or taper; the combination thus has reference to a columnar plant bearing a cephalium, or head.

CLASSIFICATION

When we consider the family, CACTACEAE, we find that of the three tribes, the PERESKIAE have leaves but no glochids, the OPUNTIAE have glochids but no leaves, and the CEREEAE have neither glochids or leaves. Of course, the distinction is by no means as simple as this, but the statement is more or less correct as far as it goes.

The tribe, CEREEAE, is divided in turn into a number of sub-tribes, one of which is that known as CEREANAE, distinguished from the others by a number of rather technical details, chief among which are the facts that in members of this group almost all of the areoles bear spines, flowers and spines are borne at the same areoles, the plants are mostly terrestrial, many-jointed, erect, and long; there are further differential points, having to do with the character of the perianth, type of flower, and so forth, which need not be gone into for present purposes.

Finally, the sub-tribe CEREANAE is again divided into a number of genera, the number, 38 according to Britton & Rose, (4) varying in other classifications, but among which all authorities place this particular genus, the genus *Cephalocereus.*

DESCRIPTION

The definition mentioned previously — a

columnar plant with a cephalium—applies to most of the plants in this genus, but not to all, strictly speaking, as may be seen from the description of the genus as given by Britton & Rose ([5]):

> Elongated cacti, various in habit, mostly columnar and erect, sometimes much branched with a short trunk or in one species with spreading and procumbent branches; in some species the flowering areoles develop an abundance of wool which confluently forms a dense mass called a pseudocephalium either at the top or on one side near the top; in others long wool or hairs grow from the areoles but a pseudocephalium is not formed; in others the flowers are produced in a circle at the top and the bristles and fruit afterwards form a collar at the base of the new growth; in other species neither wool nor hairs are produced in the flowering areoles; flowers nocturnal, short-campanulate to short-funnelform or pyriform, straight or curved; perianth persisting on the ripening fruit, except in one species; fruit usually depressed-globose, sometimes oblong; seeds black, smooth or tuberculate.

(Here were demonstrated a few plants of the genus, exemplifying some of the characteristics mentioned in the above description.)

SIZE OF THE GENUS

Britton and Rose list 49 species which they consider definitely members of this genus; they mention half a dozen others concerning whose exact status they are doubtful. This is of some interest when we note that in the 1925 edition of Bailey's "Cyclopedia," an article by Dr. Rose states that "sixteen or more species are known." Borg's ([6]) recent book does not include descriptions of all of the 49 cited by Britton & Rose, but does describe a number of additional ones sufficient to bring the total to 66. Since the publication of Borg's work, further new species have been added, notably by Bravo ([7]), Backeberg ([8]), and Werdermann ([9]), so that the grand total may be said to be somewhere in the vicinity of ninety.

It is impossible to be more definite, because the number depends entirely on what writer is taken as one's authority. Thus, the plant which Weber called *Pilocereus tetetzo,* Bravo calls *Cephalocereus tetetzo;* Britton & Rose describe an *Arrojadoa penicillata* which Backeberg calls *C. penicillatus;* the *C. chrysomallus* of Schumann is the same plant as the *Pachycereus chrysomallus* of Britton & Rose.

To make matters even more confusing, in the great classification of Schumann ([10]) in 1899, five species are cited, and of these five, three were subsequently placed by Britton & Rose in other genera. Finally, as late as 1929, we find that Berger ([11]) considers only two species, *C. senilis* and *C. hoppenstedtii,* authentic members.

DIFFERENTIAL

One reason for this apparent discrepancy lies in the fact that the genus Pilocereus has gradually come to be accepted by most authorities as being more or less synonymous with Cephalocereus, and species formerly classed separately are now being placed together in a common genus. Berger does not conform in this respect, nor does Backeberg ([12]), who makes the following distinction:

> Cephalocereus always develops from the apex a true cephalium, in which the fruit is formed, and from which it is later pushed out; Pilocereus develops only hair from the areoles, and not always even there. (In addition, Backeberg describes certain other points in the differential, having to do with variations in size and shape of fruit and flower, etc.)

These fine points being matters of controversy, it has seemed best to take as our authority Britton & Rose, and as added to by Borg, by Bravo, and by Werdermann.

DISTRIBUTION

If we take the Isthmus of Panama as a dividing line, we find that there are only seven genera which are native to both North and South America; Cephalocereus is one of these seven; but of the forty-nine species listed by Britton & Rose, only two are native to this country. These are *C. deeringii* and *C. keyensis,* both native to Florida, and both somewhat typical in that they are semi-epiphytic. Of the remaining forty-seven, the distribution is as follows: Brazil, 14; Mexico, 13; the remainder scattered over Central America, the West Indies, and the Caribbean.

Additions to the original forty-nine have for the most part been reported from Brazil, Colombia, Mexico, and Venezuela.

CULTIVATION

Cephalocereus does best in a light, thin soil. The following standard mixture has been found to do very well for most species: Equal parts sand, gravel, loam, and leafmold; ½ part each, lime and charcoal. Full sun is recommended for almost all species.

The amount of moisture needed is small, but the soil mixture as given is so light and the drainage so prompt that the plants may be watered with safety from one to three times a week (depending on the size of the pot) in summer, and only slightly less often in spring and fall. During the winter, the weight of authority favors a period of from two to three months in a cool place, with no water whatever.

Small pots are desirable, as the root systems in this genus are small in proportion to the size of the plant.

EVOLUTIONARY STAGE

Knuthenborg ([13]) has postulated an interesting theory concerning the place of this genus in the evolutionary stage of the cactaceae, which may be summarized as follows:

The flowers of most cacti are produced from the areoles, which are placed with absolute regularity, as for example, at definite fixed and constant intervals along the ribs. The most highly developed forms of cacti do not produce their flowers from normal areoles; but, before they become capable of flowering, they develop special areoles, and flowers are produced from these only.

The cephalium, therefore, represents the highest stage in the development of the cactus family; it consists of numerous areoles, closely set, and not furnished with the spine clusters normal to that species; rather, there are a greater number of more slender and bristly spines, part of which grow into soft white woolly hairs which form a compact fur. The cephalium may be decurrent (on one side, as in *C. alensis*), annulate (forming a ring, from the center of which new growth starts, as in *C. leucostele*), or terminal (at the end, as in *C. senilis*).

CEPHALIUM VERSUS PSEUDOCEPHALIUM

These terms are commonly used interchangeably, but it would be more proper to consider the cephalium of *Cactus intortus* (*Melocactus intortus*), for instance, as an example of a true cephalium, in that the head, the flower-producing part, once it has developed, remains throughout the entire life of the plant; that of *C. leucostele*, for instance, as well as those of most other Cephalocereus, are in a constant state of change and transition, and should, strictly speaking, be referred to as pseudocephalia.

DEMONSTRATION

(Above talk followed by a demonstration of several species of *Cephalocereus*, among them *C. dybowskii, C. alensis, C. leucocephalus, C. nobilis*, and *C. pernambucensis*.)

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(13) Knuthenborg, K.: Cactus & Succulent Journal, 8:167; April, 1937.

EDITOR'S NOTE: In "Cactaceae"—Marshall and Bock (1941) the authors have reconstructed the genus as follows:

Cephalocereus, as re-established by Br. & R., contained species of divergent habits, many of which were too little known at the time for sure determination as was stated in a number of instances. As here presented, the genus is limited to plants of similar characteristics which come within the limits of the following amended description:

Elongated cacti mostly columnar and erect, sometimes much branched, but in one species with spreading and procumbent branches; the rather small, bell-shaped flowers arise from a terminal or lateral cephalium furnished with bristles, this cephalium is sometimes sunken in a groove but may arise from normal ribs; the top-shaped fruits are naked and remain hidden in the cephalium until ripe when they are thrust out.

From this genus we exclude *Cereus leucostele* Gurke which we refer to the genus *Stephanocereus* and *Cephalocereus Smithianus* Br. & R., which, with *Cereus phaeacanthus* Gurke, we refer to the genus *Monvillea*. A large number of Britton and Rose's species we refer to the genus *Pilocereus*.

We retain in *Cephalocereus* the following species which were included by Br. & R. and meet the generic requirements noted above: *Cephalocereus senilis* (Haw.) Pfeif., *C. hoppenstedtii* (Weber) Schum., *C. purpureus* Gurke., *C. fluminensis* (Miquel) Br. & R., and *C. Dybowskii* (Gosselin) Br. & R. In addition to these, we include the species listed under the heading of new species in this section. (*C. Guntheri* Kupper, *C. polyanthus* Werd., and *C. Lehmannianus* Werd.)

NEW CATALOGS

GATES FAMOUS CACTUS GARDENS, Corona, Calif., has issued a wholesale price list for 1942. One of the interesting features in the list is an aerial view of his 15-acre nursery, "halfway between the desert and the sea."

R. W. POINDEXTER NURSERY, Compton, Calif., offers his new 1942 retail catalog of Epiphyllums. All of the best known hybrids are listed with their colors, and many new originations are listed for the first time. A wholesale list is also available to dealers.

R. W. KELLY, Temple City, Calif., has ready for distribution his 32-page retail catalog for 1942. The well-illustrated booklet with a cover in color is well worth the 10c charged. Dealers issuing catalogs deserve our wholehearted support, otherwise rarities would cease to be available should all dealers "go wholesale."

KNICKERBOCKER CACTUS AND SUCCULENT GARDENS, Rt. 3, San Diego, Calif., announce their catalog No. 6. Without a doubt this is the best catalog Mrs. Neff Bakkers has given her retail trade. There are 73 pictures of cacti and succulents in the 48 page list. Sent free on request.

AMATEUR "BULLETIN"

The following 16 pages comprise the amateur section which can be removed if you so desire. This magazine is sold for $1.00 per year without the Society membership or the JOURNAL. Which do our JOURNAL readers prefer: (1) To have the "Bulletin" included in the $3.00 price of the JOURNAL as an insert. Or (2) send the "Bulletin" at $1.00 separately and use the center section for reprinting Berger's "Kakteen" or Werdermann's "Neue Kakteen?"

FIG. 25. The three center plants are hybrids of the outer plants—*E. grandicornis* and *E. ingens*

An Interesting New Hybrid Euphorbia

Produced by ROBERT F. MANDA

Euphorbia x *Whitesloaneana* (*E. grandicornis* Goeb. x *E. ingens* E. Mey.) R. F. Manda, hybr. nova.

Species hybrida valde distincta. Rami ad 9 cm. diam., plus minusve constricti, centro solido ad 3.7 diam., 3-4 angulis alatis, marginibus rectis vel undulatis, podariis corneis non confluentibus, aculeis geminatis ad 1 cm. longis, spinulis minimis munitis. Flos non observatus.

Stem up to 9 cm. (3.5 in.) in diameter, more or less deeply constricted or irregular, or straight in parts, with a solid central core about 3.7 cm. (1.5 in.) in diameter, and 3 or 4 deeply wing-like angles; angles in color resembling those of *E. coerulescens* Haw., with the margins straight or wavy at intervals, with horny brown spine shields about 1.5 cm. (0.6 in.) apart, extending up to about 1 cm. (0.4 in.) above the spine pairs and not forming continuous margins, bearing pairs of spines about 1 cm. (0.4 in.) long, spreading and about 1.2 to 1.8 cm. (0.5 to 0.7 in.) apart at the tips, brown when young, becoming grey, with two minute prickles above each spine pair; flowering eyes situated to the top of the spine shields and about half-way between the spine pairs or slightly nearer the lower pair.

This curious hybrid was grown from a cross between *E. grandicornis* and *E. ingens,* which I made in 1939. The centre plant shown in the photograph is grafted, the other two are on own roots and are now over three years old. The three plants are different seedlings of one cross. The hybrid has seemed to me of particular interest because it unites two such important yet entirely dissimilar South African species, the great tree, *E. ingens,* with its regular 4-angled branches, usually quite without spines when mature, and the most spiny of all species, *E. grandicornis,* with its singularly irregular and deeply constricted 3-angled branches, forming dense bushes up to six feet or more high. The hybrid has irregularly 3 and 4-angled branches and a wide variety of branch forms, as if it were reminiscent of its two parents at different times and never quite knew which one to copy. The hybrid has not yet attained full size, and I cannot say whether the spines will become longer. They are seated on detached spine shields, quite distinct from the continuous horny margin of *E. grandi-*

cornis, yet the flowering eyes occupy a similar position about half-way between two adjacent pairs of spines. No flowers have yet been observed. The even cylindrical central core or trunk of the branches suggests that the plant may form a small tree in time.

I take pleasure in naming this hybrid for my correspondents of many years standing, the two American authors of the recent monograph on the Succulent Euphorbias of South Africa, Alain White and Boyd L. Sloane.

ROBERT F. MANDA.

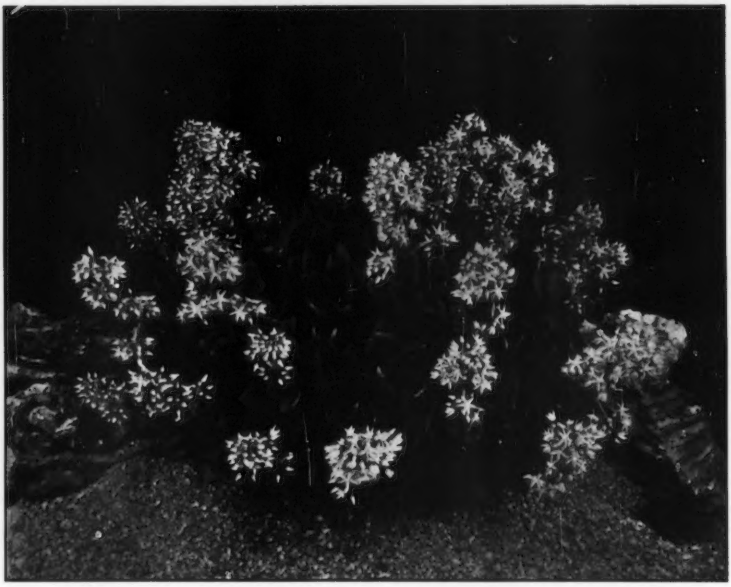


FIG. 26. *Crassula lactea* Soland. x 0.2

Notes on Succulents

By J. R. BROWN

Crassula lactea Soland

Crassula lactea is a very old and well known succulent plant and a favorite, not only among those who are especially interested in succulents, but also with horticulturists in general, as it is an easily grown and free flowering greenhouse plant and in addition, flowers during the months of December and January, a period when flowers are especially welcome.

Dr. Schönland[1] mentions that "*Crassula lactea* usually hangs down from rocks, but under cultivation it often assumes an upright habit. The flowers are usually white, but may assume a reddish tint."

As it grows here in So. California, *Crassula lactea* is a somewhat prostrate subshrubby succulent with curving stems, scarcely attaining 30 cm. in height when in flower and never seems to assume an upright habit. It lends itself well to pot culture, the outermost stems of an old plant hanging over the edge and when in flower creating a very graceful appearance. Where climate will permit its growing outdoors it is a very fine ground cover in a somewhat shaded position, the flowers are carried well and withstand heavy rains without disfigurement.

Crassula multicava Lem., which is probably better known to many under the name *Cr. quadrifida* Bak., grows in perfect harmony with *Cr. lactea* and while it is about a month later in its time of flowering, their flowering period overlaps sufficiently to form a pleasing combination of colors, the more solid grey-green of *Cr. lactea* with its pure white flowers providing an excellent foil for the reddish-green of *Cr. multicava* with its dainty pink flowers. Those who remember the fine old succulent garden of the late Col. Kewen, will recall the shady rocky slopes leading

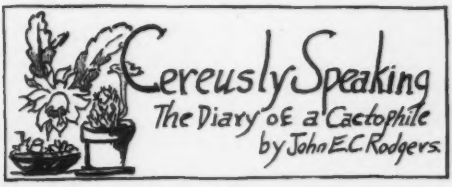
[1]Trans. Roy. Soc. So. Afr. XVII (1929) 200.

FIG. 27
Flowering stem of *Crassula lactea* approx. x 0.5

up to the garden and which were largely planted with *Cr. lactea* and *Cr. multicava* and formed a good example of the use of these Crassulas in a naturalistic manner.

The name *lactea* is in reference to the milky white color of the flowers, and the numerous flowers, borne on trichotomous, panicled cymes, are approx. 15 mm. in diam. The plant shown in the photo of this Crassula had thirty of these cymes and one of them is shown separately. The pale or greyish green leaves have a greyish white, scurfy coating when the plant is grown indoors and the row of white dots just inside the leaf margin is more easily seen, in the open, this scurfy coating may be weathered or washed off and the leaves are consequently paler in color.

As mentioned before, it is an easily grown Crassula and any well drained and porous soil seems to meet its requirements and there are always sufficient of the smooth, connate leaves to make a good looking plant throughout the year. As it likes some shade to look its best it does very well as a house plant. It also seems remarkably free from disease or insect enemies and is easily grown from cuttings.



PART II

February in Ohio

February 1. Buds are coming along nicely on *Wilcoxia Poselgeri.* They were a little further advanced on this date in 1935. But the plant hadn't survived the month of November in an unheated chicken coop that year. This is an average, February 1, in the Great Lakes region—cold and cloudy. I have recorded high and low temperatures and days of sunshine every day now for 9 full years. The average temperature on this date during that time is: high, 29 degrees; low, 18 degrees. Today high is 26 degrees and low is 18 degrees. Sunshine occurred only in 1936 and 1941 on this date. Out of 253 days of February during the last 9 years there have been only 54 days when the sun has shone at least a full half day. I am beginning to see why Haselton suggested I step up the color of my crayon sketches of these plants. A new shipment of succulents from California make Ohio grown ones look "anemic," particularly this time of year. Our out-door beds in the summer lets us see them as they should be, however.

February 3. In 1934 I made my first pen and ink sketch of a cactus for publication. I copied my own color drawing of an *Echinopsis multiplex* to accompany the "Cleveland Plain Dealer" newspaper feature about my hobby as written by Kay Thurber, local writer. It was this day in 1935 that there was a partial eclipse of the sun. The entire day was cloudy so we missed seeing it here. In 1940, *Pedilanthus* variegated species bloomed for me. I had had the plant a year. This same plant hasn't bloomed again, but the description in my diary indicates that the central bloom was much like a large poplar bud with two side arms and a central spear from the center. Both were maroon shading down into the bud which went from red to yellow, then into green just above the stem. This bud was less than an inch in length. The two side blooms were typical *Pedilanthus* pocket types with the same shaded coloring. Undoubtedly it was both a male and female flower. No seeds were set. Hope it blooms again for me for further study.

February 5. Cleaned my stove pipe in my glasshouse for the first time today—no draft. Found fly-ash from the hard coal I use in the little burner, forms a synthetic cement in a most disconcerting manner. I can still laugh at the plumber that wished to charge us $250 for installing pipes under the benches.

February 7. My 41 species of Euphorbieae are planted in a very porous soil and rest on a shelf at the north end of my greenhouse where the temperature averages 50 degrees. I water them liberally once a week. This treatment has been successful as I have not lost a plant so far. I bought them all as seedlings in 1932 and 1934 and have accorded them the same care throughout the years. Several collectors here lost Euphorbieae by letting them get too dry at the roots. I have tried to place my plants in the new greenhouse according to moisture, temperature, air circulation, and light in each section. Most plants seem happily located. Of the 40 (mostly epiphytes) plants hung from the glass bars, 23 have bloomed to date and 8 more

are budded. The succulents in the strong south and west lighted bench have nice color in stem and leaf. Because of the dry heat, I find frequent watering keeps them from shriveling and sunburn. *Astrophytum asterias* bloomed today. It usually waits until summer for me, but all of this genus are budded—*ornatum, capricorne, myriostigma, asterias,* and *capricorne-asterias* hybrid. I have these in metal trays on brackets against the north wall where they get plenty of top light. Overhead sprinkling stores moisture around the pots. Temperature remains constant at their location.

February 11. Two *Lophophora Williamsii* seedlings from seed planted of my first owned specimen plant (departed this life this day in 1936 through freezing in unprotected corner when temperature dropped suddenly to 18 degrees below zero) are now carrying on the fine family tradition of health, fine color, and "globular rotundity." Purchased the original from Gene Ziegler in 1932. I have lost, I find, an Epiphyllum hybrid that began life with me as a cutting in 1934. Despite careful nursing, it is gone. What a relief! It was like a sickly relative, a constant reminder of family degeneration. It's forbears were undoubtedly noble plants, but like most of man's attempts at improving strain, it is much more liable to disease and even insects than its parents. However, it did bear me one large blood-red 8-inch bloom.

February 14. Most folks here use soft coal for heating. Lorain is a mill town. Two railroads run through or near residential districts. Consequently, carbon covered glass and windows trouble me. In 1934, I became interested in the virtues of quartz glass. Talked then with Dr. Georgia Scharff who had worked in Austria where it was used. She says not to waste money on it. Quartz glass accumulates grime and loses its quality of letting in ultra-violet in from one to three years. In 1936, a study from Nela Park engineers brought this conclusion: "vegetation flourishes in light from which practically all ultra-violet has been filtered." So— visible light is enough and here in 1942 my plants are growing and blooming and the glass is still grimy.

February 15. H. C. Shetrone, known to you folks in California and that lively KIO crowd in Cincinnati, was in Lorain and Cleveland for the week end. He was our guest last night and today we visited collections of many of our midwest members. Shetrone talked for us at the Garden Center this afternoon. His subject "Some Lesser Known Succulents." Shetrone is director of the Ohio State Archaeological Society and Museum at Columbus—a succulent collector to you—and me.

February 17. John Bock of Sharon, Pa., told me on this date in 1937, that one and a half million cactus seedlings were frozen in January in California. NOT California! *Aporocactus* hybrid called "Cereus Mallisonii," bloomed again today. The deep rose-pink bloom is 4 inches in diameter and 3 inches long. The plant is a cutting grafted on a *Selenicereus pteranthus* (nycticaulis), is an old stand-by, and has bloomed each year since 1938. Identified it from Wm. Watson's "Cactus Culture." Has 15 or more buds in various stages of development. *Schlumbergera Gaertneri* has a shower of red flowers.

February 19. It was in 1939 that the society held a Mexican exhibit of pottery, textiles, plants, postals and books, talked about Mexican succulents, and served Mexican candies, food, and (no, not drink) just coffee. Franklyn Williams, who calls himself our social member, was host.

February 21. Broadcast over WTAM at 9:45 this morning for 15 minutes. Subject was "Succulent Facts." Little Sally Ann Keep, the three-year-old daughter of friends, told her mother flatly that she "didn't like my talk very well. He didn't sing," she complained. Come on you cactophiles. Provide me with a theme song.

February 22. Were at the Cleveland Home and Flower Show a year ago. Our society had a grand exhibit in front of a Spanish patio. A terraced bed, 6x20 feet, with plants planted in sand. Two 6-foot *Cereus peruvianus* flanked the column. We used a guest book and signed up 58 collectors. Most of them had never seen succulents bloom. Glad we had several in flower. Surprise! *Echinocereus knippelianus* has 3 blooms. Cloudy, so they are partly closed. Exquisite things. Plant has five heads and is grafted on a piece of *Lemaireocereus Weberi.*

February 28. End of the month jottings:

1934. Two long shoots on *Epiphyllum latifrons* (*oxypetalum*) are showing a widening near the ends. This becomes a stem from which smaller stems grow.

1935. Have begun to give my plants their increased allowance of water. Only three weeks until spring.

1936. "German Empress" Epiphyllum has begun to grow. Woman that had it used lime. Had round brown raised patches on stems. These have disappeared with slightly acid soil.

1937. Took 18 Mexican cacti to Garden Center for a Mexican Mart exhibit.

1938. Excess temperature since January 1, 252 degrees. Excess of rainfall only ½ inch. *O. cylindrica* is growing two, base off-sets.

1939. Spoke before Kiwanis Club for 25 minutes about my hobby. Took plants in all stages of development. Showed my 40 original color drawings of my own blooming plants.

1940. 34 degrees at 4 p. m. Cactus and Succulent Journal arrived. Excellent article on "Standard Names for Hybrid Epiphyllums." Made up a collection of 10 normal plants and their cristate forms, 50 cacti from little *Frailea* to a large southwestern Barrel, and took these with my color drawings to our Lorain Hobby Show sponsored by a group of girls, most of them my former students.

1941. Our exhibit at Cleveland Home and Flower Show so crowded I can't even get a look.

1942. Worked in greenhouse all day. Group 2 of the society took out the Society exhibit in Cleveland today. Grand attendance, I hear. People love these plants. Funny if they didn't. Seemed a pity none of us took in a *Rebutia minuscula* which is in bloom here now. My own *Mammillaria elongata* has been in bloom for several days.

(To be continued)

FROM SEATTLE, WASHINGTON

Well, it won't be long now and Spring will be here and our plants will soon be out of the house. One thing I discovered though, my Christmas cactus bloomed beautifully this year because I put it in one place and didn't move it from one place to another. Last year I left this plant in the closed-in porch and was afraid it would get too cold, so I moved it into the living room after the buds were formed; and as the result, only one bloom appeared. This year I brought it in directly to the living room and it has bloomed ever since.

I had a *Crassula arborescens* from my mother three years ago. It was a sickly plant. I pruned it to look half way normal and my wife took a slip out of it. Well, the "mother" plant is doing fine, but the slip is just like any offspring—grew faster and is healthier. It is certainly thrilling to see the slip turn out to be twice as large as the mother plant. I used the same kind of fertilizer and I treated both at the same time.

WILLARD G. JUE.

A Further Note on the Crassula Confusion

(See Vol. XIII, pgs. 109 and 193-4)

Dr. Dyer has very kindly sent me a copy of the note on the confused Crassulas which he contributed to your JOURNAL so that I may have an opportunity of adding a comment. We appear to be in agreement as to the form of the leaves in *C. perforata* and *C. rupestris* respectively, but Dr. Dyer considers that the inflorescence shown in De Candolle's illustration t. 25 represents *C. perforata* not *C. rupestris;* I can only say it is not like *C. perforata* as I know it, where the flowers are held in close bunches at intervals along the long, erect peduncle and are, moreover, greenish yellow, not white.

Since writing you I have had an opportunity of consulting Harvey in *Flora Capensis* II, p. 338 (published 1862). Here *C. perfossa* Lam., that is to say *C. rupestris* Thunb., is described as follows:

"Stem shrubby, slender, spreading, glabrous; leaves *connato-perfoliate, roundish or ovate,* subacute, thick, glabrous, punctate above, glaucous, *smooth-edged;* cymes terminal, subsessile, dense, oblong or globose, with subulate bracts ..... *DC. Prod.* 3, p. 385, *Pl. Grass.* t. 25. *Jacq. Schoenb.* t. 432 ———. Stem 1-2 ft. high, woody, dichotomous, the branches short. Leaf pairs close; leaves ¾-1 inch long, ½-¾ inch wide, very fleshy."

On the same page *C. perforata* Thunb. is described:

"Stem shrubby, slender, erect, subsimple; leaves *connato-perfoliate, ovate, acute or acuminate,* patent or squarrose, subdistant, *cartilagineo-ciliate,* green; cymes in a long, interrupted, contracted panicle (thyrsus), the branches corymbose, dense, with tooth-like bracts ..... *DC. Prod.* 3. p. 385 ..... The slender branches are often 2 feet long or more, with subdistant or distant leaf pairs, glabrous and angular. Leaves scarcely uncial, ½ inch wide, impunctate. The cartilaginous fringe is generally conspicuous, but sometimes deficient or obsolete. Flowers small. Thyrsus 6-12 inches long, its branches 1 inch long."

It will be noticed that Harvey cites De Candolle's plate as representing *C. rupestris,* as I have suggested; yet Schönland (*Materials for a Critical Revision of Crassulaceae, Trans. Roy. Soc. S. Africa,* XVII, 3, 1929, p. 210.) cites this same plate as representing *C. perforata,* though he gives the second reference (*Jacq., Hort. Schoenbr.* t. 432) for *C. rupestris* as Harvey does. Schönland gives no explanation of his transference of the plate from one species to the other, and I suggested that this change had been made in error.

This year plants of *C. rupestris* received some years ago from Pretoria have flowered here; the flowers were pure white (not pale pink) and the inflorescence a close corymb, not extended like that shown in De Candolle's plate (which could be partly due to cultivation in too moist an atmosphere) but closely resembling Fig. 149 in *Succulents for the Amateur.* I had not previously seen an inflorescence of this type. Amongst the specimens I am growing, received from various sources, the inflorescence appears to be very variable; one has an elongated panicle with the flowers long-stalked, not unlike De Candolle's illustration; another has a closer corymb of yellowish white flowers; yet another has 5-6 rather large, almost sessile pink flowers with carmine ovaries. And then there is the plant which we grow as *C. rupestris minor* which has a slender inflorescence with straw-yellow flowers in a few light bunches along the purple-tinged peduncle; the leaves are of the *rupestris* type but the plant is prostrate or even hanging and smaller in all its parts.

I wonder if there is any possibility that Thunberg's *C. rupestris,* which I am afraid I still believe is the plant depicted by De Candolle, is not the same as the one now given that name in S. Africa. In the late eighteenth and early nineteenth centuries many succulent plants were introduced to Europe from S. Africa, but the exact localities in which they were found were not given. As is well known, many of the Aloes have not been found again and are unknown in S. Africa to-day, though still persisting in European collections. Could this be a similar case? I cannot speak with certainty but I think it very likely that the specimens of *C. rupestris* in my possession are descendants of plants that have been grown in this country for very many years; the only recent introductions I can vouch for are those received from Pretoria which are similar in habit but distinct in flower characters.

I am sorry that I do not agree with Dr. Dyer's conclusions; the plants in my possession seem to me to agree with Harvey's descriptions, even to the erect growth of *C. perforata* and the spreading habit of *C. rupestris,* but it does seem obvious that the perforate species of Crassula need complete revision. I am sending Dr. Dyer sketches of the inflorescences that have been produced here and hope that his enthusiasm will be fired to undertake a thorough overhaul of these plants in their native country.

VERA HIGGINS.

BOOK REVIEW

Notas sobre Cactaceas. By Dr. Cornelius Osten. Translated from German into Spanish by Carlos F. Branner and Diego Legrand. With chapter on Biographical Data by Diego Legrand. Published under the auspices of the Museum of Natural History, Montevideo, Uruguay.

This posthumous volume of the notes of Dr. Cornelius Osten makes a worthwhile addition to the literature on South American cacti. It contains descriptions of all Uruguayan species known to the author, as well as descriptions of a few species from Brazil and Argentina. Seventy-one full page illustrations from photographs by Dr. Osten make the book valuable even to a reader who does not understand Spanish. Although not in color, the pictures are very clear in detail, and almost all of them show a ruler beside the plant so as to give an accurate idea of size.

Although a key to the species of Uruguay according to Britton and Rose is published in the book, the author follows the classification of Schumann in listing Malacocarpus, Notocactus and Hybocactus (Gymnocalycium and Frailea) as subgenera of Echinocactus. His treatment of Malacocarpus is quite different from that generally accepted; M. tetracanthus is considered as certainly a valid species, M. arechavaletai as possibly valid but perhaps a hybrid, and the other species are grouped together as Type A and Type B. He has found hybridization so general that the types—A, the dark green, few spined plants, and B, the bright green, spinier plants—seem a more reasonable classification than the usually accepted grouping into separate species. The remaining species of all genera listed are treated in more orthodox fashion, although the effects of natural hybridization are stressed in connection with Notocactus also.

As Malacocarpus and Notocactus make such desirable choices for cacti in cultivation, this account and the accompanying photographs have real significance for the cactophile.

DANIEL NEUMANN, JR.

EDITOR'S NOTE: If you desire a copy of this new book please write Box 101, Pasadena. A supply has been ordered from Uruguay.

MY FAVORITE GENUS

In growing cacti for a hobby, many of us single out one genus as a particular favorite. This choice is influenced to some extent by particular climatic conditions; consequently, we find a wide range among the favorites. Qualities of merit vary according to the personal taste and ideals of the individual, and naturally a choice is made from among cacti that grow and thrive best in a given locality.

I live in the country about ten miles east of Berkeley, and the San Francisco bay area in California. We have little fog, the summers are hot and dry and the winters' frost is seldom more than a few degrees. Most cacti, with the exception of some tender species, thrive well out of doors.

The genus *Trichocereus* has outstanding points of merit and enough diversity of size and form to permit the landscaping of a sizable plot of ground. These plants are easily propagated from seed or off-set and will tolerate almost any type of soil and adverse drainage conditions and are resistant to cold to at least ten or fifteen degrees below freezing. (*T. Bridgesii* appears to be a little more tender.) Many species seem to prefer rich soil with plenty of water and will attain specimen size in a few years. A few of theheavier types such as *T. pasacana, T. Terscheckii* and *T. poco* mature more slowly but are handsome and robust even as young plants.

This genus is not large, containing only about twenty-eight species. The flowers of *Trichocereus* are large, white, showy and fragrant and are produced in profusion in most species. The blooming season extends from May until September.

Much detailed and favorable comment could be written concerning *Trichocereus.* From my observations, the only point against plants of this genus is that they do not grow well under glass or in small pots. In severe climate and wherever they cannot be grown in the open, they may be grown in large fern pots. In severe climates and wherever they cannot be water and a fair amount of direct sunlight, protecting the sides of the pots against heat and drying.

T. spachianus is hardy and a fast grower and is found in most gardens as grafting stock.

JOHN A. SCHREUDER, Lafayette, Calif.
Member of Oakland Cactus and Succulent League.

QUESTIONS AND ANSWERS

What is the effect of changes of climate on cacti? Here in Iowa we have frequent very sudden changes, in temperature. For instance one day not much more than two weeks ago the temperature dropped forty-three degrees, and I have known it to rise or drop over fifty in the space of twenty-four hours. I haven't had my plants long enough to tell much about it, but I am wondering if these severe changes have any effect on growth and bloom.

Answer: Extreme range of temperature within a day is characteristic of most cactus districts. E.g., the Mojave Desert which will show a range of about 90 degrees from the noon temperature of 120 degrees to the night temperature of about 30 degrees at some periods of the year.

Question: What do you mean by strictly desert types of cacti?

Answer: "Strictly desert types" of cacti are those species native to the great American Deserts where they grow in the open sun in sandy soil and are subject to but infrequent rains as distinguished from the majority of cactus that grow in mountains and valleys of greater rainfall and under more favorable conditions. For example, in the Mojave and Colorado Deserts of California where rainfall is about 10-inches annually and this mostly in winter, grow *Ferocactus acanthodes, Echinocactus polycephalus, Sclerocactus polyancistras, Echinocereus mojavensis, E. engelmannii, Coryphantha deserti, C. alversonii, Carnegiea gigantea* and numerous species of Opuntia. These plants cannot be given as rich a soil nor as much water as *Cephalocereus senilis* or *Ferocactus robustus* from the high mountains of Mexico where rainfall is frequent and the cactus shares territory with tropical trees and orchids.

Question: The effect of sunlight has been partly covered, but I would like to see more on it, especially as it relates to this part of the country. Sometimes, more often than not there is blistering sun in the summer, and if the winters are dry, the sun is very bright also. Of course my plants are then in the house.

Answer: Effect of sunlight on cactus raises the entire subject of photosynthesis and is, of course, much too involved for the average plant lover. If, however, you mean that cacti cannot stand full sun, I can only answer that this depends on individual plants. If a collected plant comes from a situation where it has full sun exposure as is indicated by the extreme length of spines for the species, then it can have full sun after it is re-rooted. Many cacti come from partly shaded locations while others such as Rhipsalis, Epiphyllums,

etc., are found only in dense shade; therefore, only by knowing the habit of any given plant or species can the extent of sunlight the plant can stand be predetermined. A safe procedure is to try a partially sunny spot and change to full sun or more shade depending on the reaction of each plant.

Question: What effect, if any, is caused by using natural gas? We only use it for cooking, but even that is very hard on some kinds of house plants, ordinarily considered easy, such as geraniums, begonias. On the other hand, forcing bulbs, such as tulips and hyacinths do not seem to mind.

Answer: Natural gas or any gas or fumes are detrimental to all plant life, but cacti can possibly stand more fumes than most plants because of the greatly reduced pores of all xerophytic plants.

Question: We use coal and have the house heated by hot air. How does this effect cacti?

Answer: Coal heat sometimes releases gases into the rooms, but we have had no reports that it is detrimental unless it is noticeable to people.

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